



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,037	02/27/2004	Cenk Acar	UC1.PAU.48	8350
23386	7590	05/05/2006	EXAMINER	
MYERS DAWES ANDRAS & SHERMAN, LLP			HANLEY, JOHN C	
19900 MACARTHUR BLVD.,			ART UNIT	
SUITE 1150			PAPER NUMBER	
IRVINE, CA 92612			2856	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/789,037

Applicant(s)

ACAR ET AL.

Examiner

John C. Hanley

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. Applicant has made amendments to the written description. Applicant is reminded that under MPEP 714.02, to be fully responsive, applicant "should also specifically point out the support for any amendments made to the disclosure." However, the examiner located such support in original claim 28.

### ***Claim Objections***

2. Claims 11 and 25 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 11 and 25 fail to further limit the subject matter of claims 10 and 24, respectively, because the parent claims recite a nonresonant gyroscope, while claims 11 and 25 recite a resonant gyroscope.

3. Claim 1 is objected to for the use of the limitation "nonresonant" because everything has a resonance, and the structure recited does not in itself support the limitation absent structure such as that recited in claim 8. Further, nonresonant does not provide proper antecedent basis for resonant structure in claim 11, etc. Further, "proof masses" is not consistent antecedent basis for "mass" or "masses" in dependent claims. Also, the claim does not state what the oscillators are decoupled from. Further, applicant claims the drive-mode oscillator and the sense-mode oscillator as different structural elements, when they are structurally composed of the same elements.

Art Unit: 2856

4. Regarding claim 2, it is not stated what the coupling constants are or what they relate to, structurally; or what movement is amplified.
5. Regarding claim 3, inconsistent terminology for “proof mass” and “mass” is recited. There is no antecedent basis for “sensor”, “the drive direction”, and “the sense direction.” Further, there is no recitation of what moves in these directions. The intermediate mass does not generate a Coriolis force. It is acted upon by a Coriolis force. The Coriolis force is not transferred. The momentum of the intermediate force is transferred.
6. Regarding claim 4, the recited masses should be made consistent with the antecedent proof mass. The run-on language “the first mass as a driven mass and the second and third masses collectively as a passive mass comprising the drive-mode oscillator” needs correction to make it evident that all three masses make the drive-mode oscillator.
7. Regarding claim 5, the language “the second mass oscillates ... in the sense direction to generate a rotation-induced force that excites the sense-mode oscillator” is objectionable because the second mass is the sense mode oscillator.
8. Regarding claim 6, there is no antecedent basis for the substrate, the drive direction and the sense direction in the first clause. “Masses” is not consistent with “proof masses” in claim 1. “Movement in the drive and sense directions” does not state what moves. Same issue with “which allows movement relative”.
9. Regarding claim 7, “one of two different directions” is unclear as to what is meant by “of two different directions”.

Art Unit: 2856

10. Regarding claim 9, "wherein" should be deleted.
11. Regarding claim 11, "which passive mass-spring system in resonance with" needs grammatical correction.
12. Regarding claim 12, "mass" is not consistent with "proof mass". The third mass is part of the sense-mode oscillator, not a separate element. There is no recitation of where the vibrations come from.
13. Regarding claim 14, there is no antecedent basis for "the flexures coupled to the third mass" or "the flexures coupled to the second mass". Further, it is not clear which flexures are recited because the only flexure coupled to the third mass is coupled to the second mass.
14. Claim 15 is objected to for the use of the limitation "nonresonant" because everything has a resonance, and the structure recited in the method does not in itself support the limitation absent structure such as that recited in claim 22. Further, nonresonant does not provide proper antecedent basis for resonant structure in claim 25, etc. Also, the claim does not state what the oscillators are decoupled from. They are clearly coupled together. Further, applicant claims the drive-mode oscillator and the sense-mode oscillator as different structural elements, when they are structurally composed of the same elements.
15. Claim 16 does not state what motion is amplified.
16. Claim 17 does not have antecedent basis for "sensor" or plural "sense-mode oscillators".

Art Unit: 2856

17. Regarding claim 18, it is not clear if the mass of line 1 is the same as that in line 3. In addition, these masses are not distinguished from the later recited masses.

18. Regarding claim 19, applicant recites that the step of oscillating the second mass in the sense direction generates a force that excites the sense mode oscillator.

However, the second mass is an element of the sense-mode oscillator, and the force that is supposedly generated (by converting energy?) would appear to be the same force that oscillates the second mass in the sense direction in the first place. The second mass is not disclosed as “generating” a force. It receives a force and transfers momentum.

19. Regarding claim 20, there is no antecedent basis for the three interconnected masses. Numerous commas are needed in the last 4 lines to make it grammatically clear about what is couple to what, and what is moved where.

20. Regarding claim 21, “one of two different directions” is unclear as to what is meant by “of two different directions”.

21. Regarding claim 24, there is no antecedent basis for “the three interconnected masses”.

22. Regarding claim 26, driving the drive-mode and sense-mode oscillators is mutually exclusive from sensing motion of a sense mass. The former cannot comprise the later. The relationship of the sense mass structure with prior recited elements is unclear. The mass is implied as being structurally and functionally separate from prior recited elements.

Art Unit: 2856

23. Regarding claim 27, there is no antecedent basis for the third mass. The second mass implies a first mass that is not recited. It is not clear how the many masses are related. Which are the same as previously recited masses?

24. Regarding claim 28, there is no antecedent basis for the first, second and third masses, or “the flexures coupled to the third mass” and “the flexures coupled to the second mass”. Further, it is not clear which flexures are recited because the only flexure coupled to the third mass is disclosed as being coupled to the second mass. The two commas in line 8 should be one comma.

***Claim Rejections - 35 USC § 112***

25. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

26. Claims 1-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The drive-mode oscillator and the sense-mode oscillator are not disclosed as being either mechanically decoupled or dynamically mechanically decoupled in the original specification. The first mass is disclosed as being mechanically connected to the second and third mass via springs. This is mechanical coupling. Further, when the first mass moves in the x direction, it moves the second and third masses (the oscillator) in the x direction. This is not

dynamical decoupling. Applicant's approach of mixing separate structural elements with overlapping functional elements, and vice versa, makes it cumbersome to offer suggested language fixes. The disclosure teaches that the drive-mode oscillator is composed of at least ALL of the sense-mode oscillator components. Thus the sense-mode oscillator, as an integral component of the drive-mode oscillator, cannot, by definition, be decoupled in a broad sense from the drive-mode oscillator--because it structurally IS the drive-mode oscillator, too. Moreover, since the frequency of the sense-mode oscillations due to Coriolis force is directly related to the drive frequency, they cannot be said to be decoupled, either mechanically or dynamically. In fact, the very purpose of the system is to couple drive-mode oscillations into sense-mode oscillations via a Coriolis mechanical force.

27. The specification does teach that the *motion* of the sense-mode oscillator *in the sense direction* is decoupled from the *motion* of the drive-mode oscillator *in the drive direction*. However, applicant has not defined "decoupled" in sufficient exactness for one to determine whether another structure infringes applicant's claims. Decoupling is a matter of degree. The prior art is arguably decoupled, as that is what is intended. Applicant has not set forth a threshold for the coupled/decoupled difference in a functional sense, so it cannot be determined if other structure meets applicant's intended function.

28. Regarding claims 4, 10, 12, 14 and 28, the written description does not teach that the sense-mode oscillator includes a drive means for driving a (first) mass in a drive direction. Applicant further argues in his remarks that the sense-mode oscillator is



passive. Nor does the drive-mode oscillator (function) include a means for sensing motion of a (third) mass in the sense direction. This is further evidence of mixing separate functions and identical structure.

29. Regarding claim 16, the drive-mode oscillator is not disclosed as amplifying the motion of the sense direction, and the sense-mode oscillator is not disclosed as amplifying motion in the drive direction. In fact, applicant further argues they are decoupled.

30. Regarding claim 18, driving the sense-mode oscillator by driving a mass is not taught in the written description. Nor does the written description teach that the driving-mode oscillator sense motion of a mass in a sense direction. Nor is it taught that the second and third masses are oscillated "independently from one another" because it is taught that the third mass is oscillated by amplifying the motion of the second mass.

31. Regarding claim 20 the written description does not teach the sense-mode oscillator driving the masses in a drive direction, and the drive-mode oscillator is not taught as having a sense means. Further, the coupling of the third mass to the second mass is not taught as moving the third mass substantially only in the sense direction, because the third mass is taught as coupled to move with the second mass in the drive direction.

32. Regarding claim 21, the second mass is not taught as being coupled to the first mass by the first or third flexure. Similarly, the second flexure does not couple the third mass and second mass. Further, the written description does not teach the sense-mode

oscillator driving the masses in a drive direction, and the drive-mode oscillator is not taught as having a sense means.

***Claim Rejections under 35 USC § 102 or § 103***

33. Due to the difficulty in structurally interpreting the language decoupled and dynamically mechanically decoupled, etc., as utilized by applicant, the Examiner cannot determine whether structure found in the art is readable on such language.

***Conclusion***

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Both references to Willig et al show a Coriolis sensor that utilizes three masses with dynamic amplification. Drive element 102 is movable along only the x-axis. Coriolis element 100 is movable along the x- and y-axes. Proof element 140 is movable along the y-axis. Dynamic amplification is involved. Figure 19 of Kato similarly uses three masses, as does Park. Mochida et al use four masses, and Buestgens uses two resonating masses and an intermediate coupling mass.

35. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2856


extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Hanley whose telephone number is 571-272-2195. The examiner can normally be reached on M-F 9AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCH



HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800